ARUP

NEXTDC Limited

NEXTDC S5

State Significant Development Application (SSDA), Ecologically Sustainable Development (ESD) Report

Reference: S5-ESD-00-000-REP-J-DVA-APP-ESD REPORT

J | 29 September 2025

Job number 296866-00

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1. Executive Summary

This NEXTDC S5 Data Centre and Innovation Hub Architectural Design Report has been prepared by Arup on behalf of NEXTDC Limited to accompany a detailed State Significant Development Application (SSDA) for the data centre development at 269 Lane Cove Road. The legal description of the site is Lot 3 in Deposited Plan (DP) 1129811.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-63168959).

2. Project Introduction

This report has been prepared to accompany a detailed SSDA for the proposed data centre development at 269 Lane Cove Road, Macquarie Park (SSD-63168959).

The application seeks consent for construction and operation of a data centre development and includes site preparation works, bulk earthworks and infrastructure, and construction of the buildings, ancillary facilities, and associated site works. The application also includes the delivery of Road 13, Road 6 and an urban plaza adjacent to the Macquarie Park Metro Station entrance.

Specifically, the Project comprises the redevelopment of the site as summarised below:

- Site preparation works including demolition and removal of existing structures, tree removal and bulk earthworks.
- Staged construction and operation of two connected data centre buildings (Building A and Building B) with a maximum height of 65 metres and a combined total gross floor area (GFA) of 47,285m^2 comprising 33,142m^2 of technical data hall floor space and 14,143m^2 of office, retail and innovation hub floor space.
- Building A will be delivered in Stage 1 and will comprise the following:
    - Basement parking for 51 car spaces including two accessible spaces and 10 EV spaces
    - Seven storeys of technical data floor space accommodating seven data houses: 16,571m^2
    - Utilities including diesel generators (3MWe), above-ground water tanks for industrial water (600kL each), above-ground diesel storage tanks (100kL each) and an aboveground water tank for fire water (400kL each).
    - Business identification signage facing Waterloo Road and Land Cove Road.
    - Integrated 'Building O' component within Building A, comprising:
        - Two retail tenancies at ground level: 326m^2
        - Lobby and innovation hub including auditorium and training rooms: 3,186m^2
        - NEXTDC and ancillary office floor space on upper levels: 10,631m^2
- Building B will be delivered in Stage 2 and will comprise the following:
    - Seven storeys of technical data floor space accommodating seven data halls: 16,571m^2
    - Utilities including diesel generators (3MWe), above-ground water tanks for industrial water (600kL each), above-ground diesel storage tanks (100kL each) and an aboveground water tank for fire water (400kL each).
    - Business identification signage on the western and southern building facades.
- Landscaping across the site in accordance with the project staging, delivering a mix of native and endemic plant species, shrubs and grasses, including 139 additional trees within a total area of 4,959m^2 deep soil and a resultant tree canopy cover of 5,707m^2
- Staged delivery of public domain works including:
    - Stage 1: construction of Road 13 within the subject site and urban plaza.
    - Stage 2: construction of Road 6 (half-width) within the subject site, including provision for a future pedestrian/cycle overbridge (to be delivered by others), and works along Lane Cove Road.
- Delivery of 90 megawatts of power with a 33kV switching station on site, as well as other site services, including stormwater infrastructure.

Descriptor	Project Details
Project Area	The site has a total area of approximately 22,381m2. The entire site area will be disturbed as a result of the Project. The site does not contain any environmental constraints.
Proposed Use	Data centre with ancillary office and innovation space. Two retail premises at ground level.
Project Description	• Demolition of existing buildings and structures. • Site preparation works including tree removal, bulk earthworks, excavation and construction of retaining walls. • Staged construction of the data centre buildings including technical data hall floor space, ancillary office and innovation space and two ground floor retail premises. • Vehicle access via Waterloo Road with on-site car parking and loading within the building footprint. • Associated landscaping including extensive trees, shrubs and grasses. • Business identification signage. • Staged delivery of public domain works via a Planning Agreement, including construction of Road 13, Road 6 and an urban plaza between Building A and Waterloo Road. • Provision of required utilities, including an on-site switching station.
Gross Floor Area	Total GFA of 47,285m^2, broken down as follows: • Data halls/technical: 33,142m2 • Lobby and innovation hub: 3,186m2 • Office Building: 10,631m2 • Retail including BOH: 326m2 • Total number of data houses: 14 data houses
Building Height	• Building A: office and innovation hub – 49 metres over 10-storeys • Building A: data centre – 65 metres over nine-storeys • Building B: data centre – 60 metres over nine-storeys
Proposed Floor Space Ratio	2.1:1
Deep Soil Area	4,959m^2 of deep soil area (22.16% of total site area, 35.6% of future site area)
Car Parking	51 parking spaces, including 10 EV's and 2 accessible spaces
Motorbike Spaces	17 spaces

Bicycle Spaces	20 spaces
Utilities	Provision of required utilities, combined for both buildings, including: • 48 x diesel generators (3MWe). • 16 x above-ground diesel storage tanks (100kL each). • Eight above-ground water tanks for industrial water (600kL each). • One 400kL above-ground water tank for fire water • 33kV switching station.
Power Consumption	90 megawatts
Operations and Management	The facility will be constructed and operated by NEXTDC. The site will be operated on a 24-hour, 7 day a week basis.
Existing Services and Infrastructure	The site is fully serviced; however, existing services and infrastructure will be extended, adapted and augmented to meet the demands of the Project. A new 33kV switching station will be required to provide power to the site in the event of an emergency blackout to facilitate power to the generators.
Staging/Phasing	The Project will be constructed in two stages: • Stage 1 will include the early works for the entire site, construction of Building A, the urban plaza and Road 13 within the subject site. • Stage 2 will include construction of Building B and Road 6 (half-width) within the subject site, including provision for a future pedestrian/cycle overbridge (to be delivered by others), and works along Lane Cove Road.

3. SEARs Response

This report has been prepared in response to the requirements contained within the Secretary's Environmental Assessment Requirements (SEARs) dated 8 November 2023 issued for the SSDA (SSD-63168959). Specifically, this report has been prepared to respond to the SEARS requirement issued below.

Table 1: SEARs Compliance

Item	Description of Requirement		Section Reference (this Report)
Ecologically Sustainable Development	A description of how the proposal will incorporate the principles of ecologically sustainable development in the design, construction and ongoing operation of the development.		Section 7
	Demonstration of how the development will meet or exceed the relevant industry recognised building sustainability environmental performance standards.		Section 7
	Demonstration of how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources.		Section 7
	Consideration of whether the design enables…	The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials	Section 7.1.3
		A reduction in peak demand for electricity, including through the use of energy efficient technology	Section 7.1.1
		A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design	Section 7.1.1
		The generation and storage of renewable energy	Section 7.1.1
		The metering and monitoring of energy consumption	Section 7.1.1
		The minimisation of the consumption of potable water	Section 6.1.2
	Quantification of the embodied emissions attributable to the development		By separate submission of NABERS Materials reporting template by the QS. Refer to Appendix A

The Sustainable Buildings SEPP requires a Net Zero Statement to be prepared in circumstances where over 1,000sqm of commercial office space is included within a development. Given the proposed office component will be ancillary and subservient to the primary use of the site as a data centre, a Net Zero Statement is not required.

4. The Site

The site is located at 269 Lane Cove Road, Macquarie Park and is legally described at Lot 3 in Deposited Plan (DP) 1129811. It is located on the corner of Lane Cove Road and Waterloo Road and is made up of a single rectangular lot and is approximately 22,381m^2 in size. An aerial photograph of the site is provided at Figure 1.

The site is located in the City of Ryde Local Government Area (LGA) within the Macquarie Park corridor, an established employment precinct with a particular focus on innovation. Macquarie Park is a nationally significant research and employment centre and includes the head offices for some of Australia's leading companies including Foxtel, Optus and Siemens. The site is approximately 2km southeast of Macquarie University, and 1.5km southeast of Macquarie Shopping Centre.

Existing development includes a two-storey office furniture store (Work Arena) at the northern end of the site and offices and studios associated with Foxtel in the southern portion of the site. Scattered trees exist along the site boundaries, particularly within the western setback to Lane Cove Road, along the southern boundary and the eastern boundary.

Vehicle access to the site is currently provided from Waterloo Road with an internal driveway providing access to several at-grade parking areas. A further vehicle crossover has been constructed along the Lane Cove Road frontage; however, it is not currently in use and barriers have been installed prohibiting access.

The site is well serviced by public transport with several bus routes operating along Lane Cove Road and Waterloo Road. The entrance to Macquarie Park Metro Station is immediately to the north of the site. The site includes a lengthy frontage to Lane Cove Road which provides access to the M2 Hills Motorway and Epping Road.

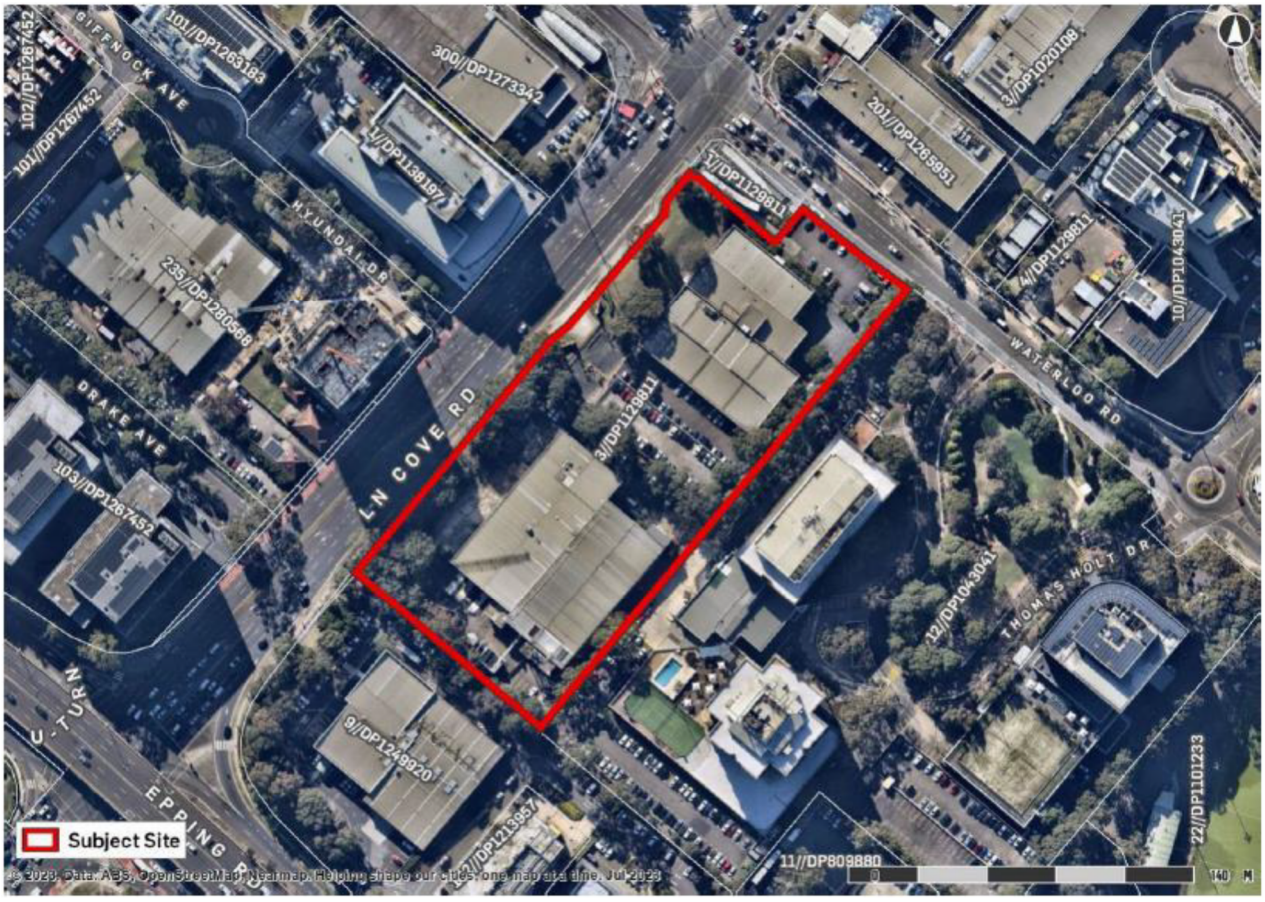

Figure 1: Aerial Photograph of Site (Source: Urbis GIS 2023)

5. Project Vision

A new approach to Data and Innovation Centre Design.

The S5 Innovation Centre is a true mixed-use facility and is unlike any other Data Centre. It takes a significantly different approach to standard industry security design for the sake of the public domain, landscape and active publicly accessible uses.

Within the facility are display areas for technology showcases such as: communications and security technology, advanced batteries and energy systems, computer cooling technology as well as new types of computers and microprocessors underpinning neural networks and artificial intelligence.

The auditorium and support spaces allow for industry seminars, conferences, workshops and other learning and training opportunities for tenants, clients, consultants and contractors as well as broader industry partners and stakeholders in government and universities.

The data halls and offices provide specially designed, resilient spaces for tenants and agencies which require guaranteed levels of uptime such as telecommunications, banking, commercial cloud, defence and disaster recovery.

With its broad glazed frontage to a large public forum, sky gardens, public transport integration, generous unfenced landscape curtilage, public streets and ways crossing the campus and retail shops embedded in the envelope, S5 Innovation Centre inverts the standard model of a ring-fenced fortress to deliver critical digital infrastructure in a way which is completely new, different and engaging.

6. Methodology

This ESD strategy has been developed to meet the SEARs requirements by applying past project experience of other data centre projects:

The principles of ecologically sustainable development as defined in Section 193 of the EP&A Regulation (2021) are as follows: 777

a) the precautionary principle,

b) intergenerational equity,

c) conservation of biological diversity and ecological integrity,

d) improved valuation, pricing and incentive mechanisms.

The principles of ecologically sustainable development have been used as an overarching guide to develop the ESD strategy for the project. The key elements of this development proposal in respect to Section 193 are resource consumption and carbon emissions. Specifically, the ESD strategy for the development addresses the following key areas:

- Greenhouse Gas Emissions
- Energy
- Water
- Material Resources
- Waste

Each of these areas identifies design initiatives that have been incorporated or are under consideration that have the potential to reduce the environmental impact of the proposed data centre. It should be noted the building is in the Development Application stage, therefore further consideration of sustainability initiatives will be applied throughout design development. The ESD principles specific to Section 193 are detailed in this Section, for further detail please refer to the design initiatives detailed in the body of the report.

6.1 The Precautionary Principle

The precautionary principle is defined as follows:

The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

(3) In applying the precautionary principle, public and private decisions should be guided by -

(a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(b) an assessment of the risk-weighted consequences of various options.

The Proposed Development has the potential to consume significant amounts of energy and water. A range of measures have been considered to reduce the environmental impact of the Proposal.

Energy consumption will be minimised through optimisation of mechanical systems including higher operating temperature set points, an energy management system and high efficiency equipment. In addition, the Proposed Development will be designed to achieve NABERS Energy Ratings: 5 Stars for Building A/B and 5.5 Stars for Building O.

Water consumption will be minimised through a range of measures including multi-layered metering strategies, rainwater harvesting, and deploying high-efficiency equipment to achieve a balance between energy consumption and water consumption. In addition, Building O is targeting a NABERS Water Rating of 3 Stars.

6.2 Intergenerational Equity

The principle of intergenerational equity is defined as follows:

The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

Data Centres are considered to be critical infrastructure, that not only provide employment-generating opportunities within the Information, Communication and Technology (ICT) sector, but also support the operation of business to business and business to consumer services. The storage of cloud and electronic data is a fundamental piece of infrastructure and services for both business and consumer transactions. By supporting productivity and helping to drive business activity that underpins current and future economic growth, the Proposed Development will positively impact future generations.

In addition, the Proposed Development will seek to minimise greenhouse gas emissions through operational energy efficiency measures, on site renewables and carbon offsets. Reducing the carbon footprint of the Proposed Development will also minimise the potential detrimental impact to future generations.

6.3 Conservation of biological diversity and ecological integrity

The principle of the conservation of biological diversity is defined as follows:

The principle of the conservation of biological diversity and ecological integrity is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

The resultant direct, indirect, and cumulative ecological impacts of the proposal are being carefully considered. Through the development of an Environment Impact Statement, recommendations and mitigation measures will be develop in order to address the principle of biological diversity and ecological integrity.

6.4 Improved valuation, pricing and incentive mechanisms

The principle of improved valuation, pricing and incentive mechanisms is defined as follows:

The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included in the valuation of assets and services, such as -

(a) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and

(b) the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and

c) established environmental goals should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

For the Proposed Development the building will be owned by the proponent however the IT equipment in the facility will be owned and managed by the tenants. Scope 2 emissions from tenant electricity consumption will be the main driver of carbon emissions for the facility. Electricity consumption from the tenant activities at the facility will be directly charged to the tenants. For tenant Scope 2 emissions, the proponent will provide renewable energy supply choices in the proposed facility.

The proponent will work with utility providers, energy retailers and renewable project developers to offer the data centre tenants innovative and commercially attractive renewable electricity supply options. At the same time, the proponent will support tenants who choose to self-procure renewables to offset their Scope 2 emissions in the facility. The proponent will support this outcome by providing Quarterly Carbon Reviews with granular breakdowns of energy consumption and associated emissions by location.

7. Assessment and Mitigation of Impacts

The following sections describe in detail the assessment of potential impacts and specific mitigation measures to respond to the SEAR's objectives.

7.1 ESD Design Initiatives (Mitigation Measures)

To address the SEARs and Sustainable Buildings SEPP targets, the project will develop a comprehensive ESD strategy. The following areas are the focus of the design team:

- Energy and Greenhouse Gas Emissions – Incorporate energy efficient designs and technological strategies to reduce energy use and greenhouse gas emissions.
- Water – reduce consumption of potable water, by installing water efficient systems and water sensitive urban design features.
- Material Resources and Waste – Optimise the use of resources while minimising waste throughout the whole life cycle of the building. Reduce material embodied impacts through structurally optimal design and dematerialisation, low carbon building materials and recycled content.

The strategy is reflected in the development's commitment to achieve NABERS Energy ratings: a minimum 5 Stars for Building A/B and 5.5 Stars for Building O. A 5-star target performance is considered 'superior performance', while a 6 star target considers a project as a 'market leader' for data centres and offices.

This section outlines the ESD initiatives that are either being implemented into the design or are earmarked for further consideration.

7.1.1 Energy and Greenhouse Gas Emissions

This section describes the measures incorporated and being considered in the development's design to minimise the proposal's energy use and operational greenhouse gas emissions, in line with the Government's goal of net zero emissions by 2050 as noted in the SEARs.

NEXTDC seeks to design, build, and operate all data centres to achieve the NABERS Energy for data centres (Infrastructure) rating of 5 star minimum, with a target to achieve 5.5 to 6 stars. The office portion of the development (Building O) is targeting a 5.5 star minimum rating. Once certified, the NEXTDC facilities management team will perform annual re-certification.

The target Power Use Efficiency (PUE) rating for NEXT DC S5 is 1.35. This metric is used to determine the energy efficiency of data centres. Studies indicate that the global average PUE for data centres decreased from 2.5 when it was first introduced in 2007 to 1.59 in 2020.[1]

Strategies currently incorporated in the design of NEXTDC S5 to satisfy the requirements outlined above include:

- Water-side free cooling via heat exchangers and cooling towers reduces the runtime of the chillers.
- Envelope design using insulation, high performance selective glazing and external shading on appropriate elevations to achieve Section J envelope minimum compliance, balanced with allowing daylight into office spaces to reduce the reliance on artificial lighting.
- Efficient LED lighting throughout.
- Solar photovoltaic generation across rooftop areas where area is available.
- Provision of EV charging stations.

[1] Brocklehurst, Fiona. "International review of energy efficiency in Data Centres for IEA EBC Building Energy Codes Working Group" March 2022

- Metering and monitoring of energy consumption.

Potential strategies to be explored in the design of NEXTDC S5 include:

- Mixed mode ventilation to office spaces to reduce the reliance on mechanical heating and cooling.
- High albedo materials to reduce Heat Island Effect, including high 'Solar Reflectance Index' 'cool roof' cladding materials and paving.

See Appendix A.2 for benchmarking calculations.

7.1.2 Water

This section describes the measures incorporated and being considered in the development's design to minimise the proposal's potable water consumption as noted in the SEARs.

The project Water Use Efficiency (WUE) rating for NEXTDC S5 is calculated to be 2.6. This metric is used to determine the water efficiency of data centres.

Strategies currently incorporated in the design of NEXTDC S5 to satisfy the requirements outlined above include:

- Recirculation and capture of fire testing water
- Rainwater collection, for irrigation, toilet flushing and miscellaneous non-potable cold water requirements.
- Cooling tower capture for re-use. (optional)
- Water treatment measures to improve the number of cycles, thereby reducing cooling tower discharge.
- Efficient fixtures and fittings with high WELS ratings.

Potential strategies in the design of NEXTDC S5 to satisfy the requirements outlined above include:

- Use of native low water need species in landscaping.
- Prioritise permeable finishes and paving.
- Consideration of connection to recycled water facilities.

See Appendix A.2 for benchmarking calculations.

7.1.3 Material Resources and Waste

This section describes the measures incorporated or being considered in the development's design to optimise the use of resources while minimising waste.

Potential strategies in the design of NEXTDC S5 to satisfy the requirements outlined above include:

- Structure developed around enabling low carbon materials.
- Structural optimisation considering dematerialisation against material carbon impacts and local availability, aiming to develop a Design for Disassembly (DfD) strategy.
- Consideration of low carbon, high Portland cement replacement concrete and/or potentially carbon neutral certified concrete for concrete elements, arc furnace produced steel, high recycled content lower embodied carbon aluminium for glazing systems.
- Independently reviewed whole-building Life Cycle Assessment of embodied carbon and other materials impacts.
- Provision of on-site separation of waste streams to maximise diversion from landfill.

- Development of a construction and demolition waste management plan, detailing all major waste streams generated, including disposal and diversion rates.

8. Conclusion

The ESD strategy is being developed to align with the SEARs requirements and Sustainable Building SEPP requirements for the NEXTDC S5 data centre development. These strategies will be realised through focused ESD initiatives involving building design that considers optimised energy generation, reduced greenhouse gas emissions and potable water use, optimised resource use and minimisation of waste throughout the whole lifecycle of the building.

The above mitigation measures listed in Section 6 act to reduce the impacts of the proposal, particularly with regards to energy and water consumption. While savings of measures included in the design have been noted, other measures have been earmarked for further consideration where the savings will be further progressed through detailed design. As a result, it is not possible at this stage to give a definitive answer to the total savings achieved. Despite this, mitigations which have been included in the design have achieved significant savings across energy and water. Below provides a summary of the key savings.

• Energy use – Designing to a PUE of 1.29 rather than an industry standard of 1.59 has resulted in a 19% saving in energy use. In addition, the energy and greenhouse gas emissions targets are embedded within the NABERS Energy rating tool. The Building A/B development is targeting a 5-star NABERS Energy rating, and the Building O is targeting a 5.5-Star rating.

• Water use – WUE of 2.6. The Building O development is targeting a 3-Star NABERS Water rating.

The mitigation measures in Section 6 also act to impact or influence the ESD principles. The ESD principles that are particularly influenced by the above measures include:

• Intergenerational equity – By reducing environmental impacts and the consumption of resources due to the proposal, the measures help towards ensuring the health and productivity of the environment is maintained for the benefit of future generations.

• The precautionary principle – By reducing environmental impacts and resource consumption, the measures serve to avoid, wherever practicable, serious or irreversible damage to the environment.

Appendix A

A.1 NABERS Materials Reporting Template

NSW Government
4 Parramatta Square
Parramatta NSW 2150
nabers.gov.au

NABERS Embodied emissions materials form

New non-residential developments must complete this form

From 1 October 2023, all new non-residential developments must report on embodied emissions using this form in NSW, where the NSW government's State Environmental Planning Policy (Sustainable Buildings SEPP) 2022 applies. You must disclose the amounts of key materials at the development application and construction certificate stages.

More on the Sustainable Buildings SEPP

Embodied carbon emissions are generated across the full life cycle of a building from "cradle to grave". Embodied carbon made up 16% of the whole-of-life carbon footprint of Australia's buildings in 2019 [1]. The purpose of this form is to report on material quantities only, to support project team discussions about potential reduction in emissions from key materials. The form does not include embodied emissions factors. This reporting form will be updated to reflect the NABERS Embodied Carbon tool when it's available in 2024.

Step 1: About the building

In the 'About the building' tab, you will add the location, function, and type of building you are planning to construct. You will also need to add information that describes the building, including gross floor area, number of floors, area of carpark, and more. Collecting this information will allow the NSW Government to compare similar buildings.

Step 2: Quantity of materials

In the 'Quantity of materials' tab, you will add the amounts of materials that you will use to construct your building. You only need to complete those fields relevant to your building. Leave fields that aren't relevant to your building blank. We recognise that there will be uncertainty, particularly at DA stage, so please use your best estimates where information is unknown (e.g., based on past projects).

How much do I need to include?

You must include all parts of the building delivered by the main contractor, covering at least 80% of the total materials bill. For example, if you spent $100,000 on materials, you need to include the material amounts of at least $80,000 of those materials in this form.

Wherever possible, consider materials costs only, not labour, plant or equipment. However, where you cannot split out the materials costs, please simply be consistent in the way the costs are reported throughout the spreadsheet.

Enter the **quantity of materials** (excluding labour, plant, equipment, margins and taxes) for:

(1) Structure (substructure and superstructure) within the envelope of the building. Also include any ancillary buildings that are necessary for the main building to function (for example, plant that is in a separate building).

(2) Envelope (cladding, curtain walls, roofing, windows, doors etc.)

(3) Permanent internal walls and doors. At minimum, this should include all structural walls.

(4) External works (hard landscaping, carparks, etc.) outside of the building envelope.

Enter the **cost of materials** (excluding labour, plant, equipment, margins and taxes) for:

(5) Building services (mechanical, electrical, plumbing, vertical transport, etc.) required to run the core of the building. Exclude special equipment required by a particular tenant.

You must enter the amounts of materials in SI units (commonly known as the metric system). These are generally consistent across the various products on the market. However, you might need to convert the units of some materials (for example, convert volume to kg).

Step 3: Certifier details

In the 'Certifier' tab you will add the details of the person who has entered data, and the person who has certified the accuracy of the data. The certifier must be a quantity surveyor, designer, engineer or NABERS assessor.

Step 4: Attach to approval

Attach this Excel spreadsheet to your development application or construction certificate application.

The data collected in this form will be used by the NSW Government to inform future policy development.

Help!

If you have general questions about reporting on the embodied emissions of your building, you should contact your local council or consent authority.

If you have technical questions about this spreadsheet, please contact NABERS:
nabers@environment.nsw.gov.au

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[1] Green Building Council of Australia, 2021, https://new.gbca.org.au/news/gbca-news/gbca-and-thinkstep-release-embodied-carbon-report/

Step 1: About the building

Fill out blue cells

Building location and site data	Value	Unit	Note	Comment
Building address	269 Lane Cove Road, Macquarie Park			
Postcode	2113		Required	Postcode of building
Town/city	2113		Town/city/suburb/region automated from postcode (may not give exact town name)	Town/city/suburb/region of the building site.
Distance to nearest major city/town	2	km	Enter for rural/regional locations only	Declare the shortest route by road to your site from the centre of your nearest major city (>100,000 people). The route must be traversable by a semitrailer truck.
Project stage	Development Application		Required	Stage of development
New build or major renovation?	New build		Required	
Brownfield or greenfield site?	Brownfield		Required	

Floor area by NCC building classification	Gross (GFA)	Net (NLA/NSA/UFA)	Unit	Note	
Please enter all floor areas relevant to your building. Leave areas blank if not applicable. Please enter Gross Floor Area (GFA) for all building classifications. Please also enter the corresponding net area (Net Lettable Area, Net Sellable Area or Usable Floor Area) where it is commonly used for that building classification.					
Class 1a: Detached residential buildings			m²	Required for Class 1a: Detached residential houses, townhouses	Gross Floor Area (GFA), as defined by the AIQS Australian Cost Management Manual
Class 1b: Boarding houses and hostels			m²	Required for Class 1b: Boarding house, guest house, hostel	Net area (Net Lettable Area, Net Sellable Area, Usable Floor Area), as defined by the PCA's Method of Measurement
Class 2: Multi-unit residential buildings			m²	Required for Class 2: Multi-unit residential, including apartment buildings	
Class 3: Other residential buildings			m²	Required for Class 3: Other residential buildings	
Class 4: Residential inside non-residential			m²	Required for Class 4: Residential building inside a non-residential building, e.g., caretaker residence	
Class 5: Office buildings			m²	Required for Class 5: Office building	
Class 6: Retail buildings			m²	Required for Class 6: Retail building, e.g., shop, restaurant, café	
Class 7a: Carparks			m²	Required for Class 7a: Carparks	
Class 7b: Warehouse-type buildings			m²	Required for Class 7b: Warehouses, wholesalers and storage facilities	
Class 8: Industrial buildings	101,283	101,283	m²	Required for Class 8: Industrial buildings, e.g., factories and workshops	
Class 9a: Healthcare buildings			m²	Required for Class 9a: Healthcare, e.g., hospitals, clinics, day surgeries	
Class 9b: Civic buildings			m²	Required for Class 9b: Civic buildings, e.g., theatres, civic centres, train stations	
Class 9c: Aged care and personal care buildings			m²	Required for Class 9c: Aged care and personal care	
Class 10a: Non-habitable buildings			m²	Required for Class 10a: Non-habitable buildings including sheds, carports and private garages	
Class 10b: Miscellaneous structures			m²	Required for Class 10b: Miscellaneous structures, including fences, masts, antennas, retaining walls and swimming pools	
Class 10c: Bushfire shelters			m²	Required for Class 10c: Bushfire shelters not attached to a Class 1a building	
Total	101,283	101,283	m²	Required: Sum of m² inputs must be more than 0.	

Project information	Value	Unit	Note	
Total cost of project	1,532,941,000	AUD excl. GST	Required	Include labour, materials, transport, plant, equipment and professional fees. Exclude GST, land, finance, escalation and other costs.
Building design life	50	years	Required	If uncertain, enter 50 years
Estimated envelope life		years	Optional	
Estimated replacement cycle for mechanical services		years	Optional	
Estimated replacement cycle for vertical transportation		years	Optional	

Dimensions of the building and the site	Value	Unit	Note	
Site area	22,393	m²	Required	Total area of site to external boundary.
Shared services or infrastructure	Yes		Required	Indicate if there are shared services that the building utilises, or shared foundations, basement or podium
Building footprint area	11,090	m²	Required	Total floor area of the ground floor measured to the outside edge of the floorplate. Total 5 buildings.
Typical floor area (if different to building footprint area)		m²	Only needed if different to row above	For one building only.
Typical floor perimeter	491	m	Required	
Area of external carpark (not included in GFA)		m^2	Required. Enter 0 if not applicable.	
Area of external hardstand (not included in GFA)	5,287	m^2	Required. Enter 0 if not applicable.	
Area of other hard landscaping (not included in GFA)		m^2	Required. Enter 0 if not applicable.	Include all other impervious areas. For example, patios, paths and driveways (not already included in carparks and hardstands above).
Number of floors/storeys above ground, including ground floor	9	no.	Required	
Number of floors/storeys below ground	0	no.	Required. Enter 0 if not applicable.	
Number of floors/storeys of car parking	0	no.	Required. Enter 0 if not applicable.	
Total height above ground	65	m	Required	Measured from the average finished grade to the highest point of the building, excluding protrusions (lighting rods, masts, chimneys, etc.)

Structural material choices	Value	Unit	Note	
Foundation type	Piles		Required	
Frame type (dominant)	Reinforced concrete		Required	
Suspended floor type (typical)	Reinforced concrete		Only needed for multi-storey buildings	
Describe low carbon materials specified in your building (e.g. green concrete, low carbon bricks)			Required	
Describe recycled content specified in your building (e.g. recycled steel)			Required	

Step 2: Quantity of materials

Complete all blue cells that are applicable to the building.Leave items that aren't applicable blank.

Fill out blue cells

Material category	Sub-category 1	Sub-category 2	Sub-category 3	Value	Unit of measure	Comment	AIQS ACMM Code	ICMS3 (Level 3 Codes Construction)
Structure								
The structural parts of the building that are below ground (substructure) and above ground (superstructure). This includes fill below the substructure, foundations, basement levels, suspended floors, wall structure, roof structure, stairs, lift shafts and balconies. It excludes external areas such as hardstands, carparks, patios, etc.								
Coverage of structural material spend	-	-	-	82.5%	%	Required. Coverage of spend for structural elements entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		
Concrete in-situ	≤10 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>10 MPa to ≤20 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>20 MPa to ≤32 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>32 MPa to ≤40 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>40 MPa to ≤50 MPa	-	-	69,377	m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>50 MPa to ≤60 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>60 MPa to ≤80 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>80 MPa to ≤100 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete in-situ	>100 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	01_SB or 02-11	02 or 03
Concrete pre-cast panel	-	-	-	0	m³	Please enter reinforcing steel in relevant line items below. If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB or 02-11	02 or 03
Concrete block	Hollow core	-	-		m³	Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000). Please include all block fill concrete and all reinforcing steel in relevant line items above/below.	01_SB	02 or 03
Concrete block/brick	Solid	-	-		m³	Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000)	01_SB	02 or 03
Concrete block/brick	Solid AAC	-	-		m³	Solid Aerated Autoclaved Concrete (AAC) block. Enter as cubic metres, calculated as (area in m²) * (thickness in mm / 1000).	01_SB	02 or 03
Mortar	-	-	-		kg		01_SB	02 or 03
Reinforcing steel	Bar & mesh	-	-	12,933,971	kg	**Include all reinforcing steel bar/mesh in the building's structure in this row.**Usually this is calculated as kg/m³ per concrete element and then summed. Example: 10 m³ of 40 MPa concrete @ 100 kg/m³ + 5 m³ of 50 MPa concrete @ 150 kg/m³ = 1,750 kg reinforcing steel.	01_SB or 02-11	02 or 03
Reinforcing steel	Fibre & strand	-	-		kg	**Include all steel fibre reinforcing and steel strand in the building's structure in this row.**	01_SB or 02-11	02 or 03
Structural steel	Hot rolled structural	-	-	200	t	Examples include universal beams, universal columns and welded beams	01_SB	02 or 03
Structural steel	Cold formed structural	-	-		t	Examples include C purlins, Z purlins and all light gauge steel framing	01_SB	02 or 03
Structural steel	Other welded structural	-	-		t		01_SB	02 or 03
Structural steel	Plate	-	-		t	Include any allowance for connections here	01_SB	02 or 03
Structural steel	Sheet	-	-		t		01_SB	02 or 03
Stainless steel	-	-	-		t	Primarily for engineered timber structure connections	02_11	02 or 03
Reinforced concrete piles	Concrete	-	-	1,233	m³	Please enter reinforcing steel in the line below. If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB	02 or 03
Reinforced concrete piles	Steel reinforcing			308,332	kg	If not known at DA stage, please make your best estimate. If not known at CC stage, please ask your supplier.	01_SB	02 or 03
Steel piles	-	-	-		t	Where concrete and reinforcing steel are also used, enter these in the rows above.	01_SB	02 or 03
Timber poles/piles	-	-	-		m³	Where concrete and reinforcing steel are also used, enter these in the rows above.	01_SB	02 or 03
Timber (solid)	Sawn softwood	-	-		m³		02_11	02 or 03
Timber (solid)	Sawn hardwood	-	-		m³		02_11	02 or 03
Timber (engineered)	CLT	-	-		m³		02_11	02 or 03
Timber (engineered)	Glulam	-	-		m³		02_11	02 or 03
Timber (engineered)	LVL	-	-		m³		02_11	02 or 03
Timber (engineered)	OSB	-	-		m³	Enter as cubic metres, calculated as (area of wall in m²) * (thickness in mm / 1000)	02_11	02 or 03
Brick	Heat cured	-	-		m³	Enter as cubic metres, calculated as (area of wall in m²) * (thickness in mm / 1000)	02_11	02 or 03
Structural Insulated Panel (SIP)	Steel outer	-	-		m²		01_SB	02 or 03
Structural Insulated Panel (SIP)	Aluminium outer	-	-		m²		01_SB	02 or 03
Structural Insulated Panel (SIP)	Engineered timber outer	-	-		m²		01_SB	02 or 03
Fill	-	-	-		t	Include purchased material only. Exclude site-won material.	01_SB	01
Sand & gravel	-	-	-		t	Include purchased material only. Exclude site-won material and sand/gravel in concrete.	01_SB	01
Waterproofing membrane	Bituminous	-	-	1,397	m²		01_SB	01 or 02 or 03
Waterproofing membrane	Polyethylene	-	-		m²		01_SB	01 or 02 or 03
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Other structural (Describe and add unit >>)		-	-			Please enter a description for any structural material that does not fit a predefined classification		
Envelope								
The skin of the building that separates the internal building from the external environment. This includes the roof cladding, wall cladding, windows, doors and internal/external shading. It also includes insulation and the internal wall lining of envelope walls.								
Coverage of envelope material spend	-	-	-	82.5%	%	Required. Coverage of spend for the envelope items you have entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		

Roof cladding	Profiled steel	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row includes all metal-coated and pre-painted steel sheets where steel is the base metal. Examples include: galvanised steel, zinc-aluminium (zincalume) coated steel and zinc-aluminium-magnesium (ZAM) coated steel, whether painted or unpainted.	05_RF	03 or 04
Roof cladding	Profiled aluminium	-	-	11,090	m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row also includes pre-painted aluminium sheets.	05_RF	03 or 04
Roof cladding	Profiled zinc	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the roofing sheets. This row also includes pre-painted zinc sheets.	05_RF	03 or 04
Roof cladding	Membrane	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap in the membrane sheets.	05_RF	03 or 04
Roof cladding	Tiles (traditional clay)	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap between the tiles.	05_RF	03 or 04
Roof cladding	Tiles (concrete)	-	-		m²	Enter as m² of roof area. Exclude allowances for overlap between the tiles.	05_RF	03 or 04
Roof cladding	Other (Please describe >>)		-		m²	Please enter a description for any roofing that does not fit a predefined classification	05_RF	03 or 04
Wall cladding	Bricks (heat cured)	-	-		m²	Enter as m² of wall area. Heat-cured bricks use a kiln or furnace to raise the brick temperature above ambient temperature during curing process.	06_EW	03 or 04
Wall cladding	Bricks (air dried)	-	-		m²	Enter as m² of wall area. Air-dried bricks are cured using ambient temperature.	06_EW	03 or 04
Wall cladding	Bricks (under fired)	-	-		m²	Enter as m² of wall area.	06_EW	03 or 04
Wall cladding	Bricks (concrete)	-	-		m²	Enter as m² of wall area	06_EW	03 or 04
Wall cladding	Mortar and render	-	-		kg		06_EW	03 or 04
Wall cladding	Profiled steel	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row includes all metal-coated and pre-painted steel sheets where steel is the base metal. Examples include: galvanised steel, zinc-aluminium (zincalume) coated steel and zinc-aluminium-magnesium (ZAM) coated steel, whether painted or unpainted.	06_EW	03 or 04
Wall cladding	Profiled aluminium	-	-	19,896	m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row also includes pre-painted aluminium sheets.	06_EW	03 or 04
Wall cladding	Profiled zinc	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap in the cladding sheets, offcuts, etc. This row also includes pre-painted zinc sheets.	06_EW	03 or 04
Wall cladding	GRC cladding	-	-		m²	Enter as m² of wall area. GRC = Glass Reinforced Concrete.	06_EW	03 or 04
Wall cladding	Timber weatherboards	-	-		m²	Enter as m² of wall area. Exclude allowances for overlap between weatherboards, offcuts, etc.	06_EW	03 or 04
Wall cladding	Fibre cement board	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Terracotta	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Brick tiles / veneers	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc.	06_EW	03 or 04
Wall cladding	Plasterboard	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc. Include both external wall linings and internal wall linings for envelope walls.	12_WF or 06_EW	03 or 04
Wall cladding	Plywood	-	-		m²	Enter as m² of wall area. Exclude allowances for offcuts, etc. Include both external wall linings and internal wall linings for envelope walls.	12_WF or 06_EW	03 or 04
Wall cladding	Other (Please describe >>)		-		m²	Please enter a description for any wall cladding that does not fit a predefined classification	06_EW or 12_WF	03 or 04
Windows & doors	Aluminium frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Aluminium frame	Double glazed	-		m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Aluminium frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Double glazed	-		m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Timber frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Single glazed	-		m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Double glazed	-		m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	uPVC frame	Triple glazed	-		m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Single glazed			m²	Include all single glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Double glazed			m²	Include all double glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Frameless	Triple glazed			m²	Include all triple glazing, including standard, toughened, laminated and low-E	07_WW or 08_ED	03 or 04
Windows & doors	Other (Please describe >>)		-		m²	Please enter a description for any windows or doors that do not fit a predefined classification	07_WW or 08_ED	03 or 04
Curtain wall	Single skin façade	Glazed panel	Single glazed		m²	Please declare all single-skin façade area in this section. All double-skin façade area should be entered in the next section. Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Glazed panel	Double glazed	3,170	m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Glazed panel	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Aluminium cladding		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Insulated shadow box		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Brick cladding		m²		06_EW	03 or 04
Curtain wall	Single skin façade	Opaque panel	Stone cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Single glazed		m²	Please declare all double-skin façade area in this section. Please declare as the area of the curtain wall and do not enter the inner and outer skins twice. Include all single glazing, including standard, toughened, laminated and low-E.	06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Double glazed		m²	The type of glazing refers to the building's envelope wall, not including the outer skin	06_EW	03 or 04
Curtain wall	Double skin façade	Glazed panel	Triple glazed		m²	The type of glazing refers to the building's envelope wall, not including the outer skin	06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Aluminium cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Insulated shadow box		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Brick cladding		m²		06_EW	03 or 04
Curtain wall	Double skin façade	Opaque panel	Stone cladding		m²		06_EW	03 or 04
Curtain wall	Other (Please describe >>)		-		m²	Please enter a description for any curtain wall that does not fit a predefined classification	06_EW	03 or 04

Stick-framed wall system	Aluminium frame	Glazed section	Single glazed		m²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed section	Double glazed		m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Glazed section	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Aluminium cladding		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Insulated shadow box		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Brick cladding		m²		06_EW	03 or 04
Stick-framed wall system	Aluminium frame	Opaque section	Stone cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Single glazed		m²	Include all single glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Double glazed		m²	Include all double glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Glazed section	Triple glazed		m²	Include all triple glazing, including standard, toughened, laminated and low-E	06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Aluminium cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	GRC cladding		m²	GRC = Glass-fibre Reinforced Concrete	06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Insulated shadow box		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Brick cladding		m²		06_EW	03 or 04
Stick-framed wall system	Steel frame	Opaque section	Stone cladding		m²		06_EW	03 or 04
Stick-framed wall system	Other (Please describe >>)		-		m²	Please enter a description for any wall system that does not fit a predefined classification	06_EW	03 or 04
Wall louvre system	Aluminium	-	-	6,356	m²		06_EW	03 or 04
External shading system	Aluminium frame	Aluminium cladding	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	GRC cladding	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000). GRC = Glass-fibre Reinforced Concrete.	06_EW	03 or 04
External shading system	Aluminium frame	Terracotta cladding	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Stone cladding	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Pre-cast concrete	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Timber	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Glass (opague)	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Aluminium frame	Steel	-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
External shading system	Other (Please describe >>)		-		m²	Please enter as m² of shaded area = linear metres * (width in mm / 1000)	06_EW	03 or 04
Roller doors	Steel profile	-	-		m²	Please note unit is square metres, not quantity	08_ED	03 or 04
Roller doors	Hardwood over steel	-	-		m²	Please note unit is square metres, not quantity	08_ED	03 or 04
Roller doors	Softwood over steel	-	-		m²	Please note unit is square metres, not quantity	08_ED	03 or 04
Revolving doors	Glass/aluminium/steel	-	-		no.		08_ED	03 or 04
Fire-rated doors	Engineered timber	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04
Fire-rated doors	Steel	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04
Fire-rated doors	Aluminium/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	08_ED	03 or 04
Insulation	Glass wool / fibreglass	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Stone wool	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Polyester	-	-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Expanded polystyrene	-	-	30,986	m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Insulation	Other (Please describe >>)		-		m²	Please include both wall and ceiling insulation	05_RF or 06_EW	03 or 04
Other (Please describe and add unit >>)		-	-			Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any envelope material that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any envelope material that does not fit a predefined classification		

Permanent internal walls and doors

Walls and doors within the building that are either structural or designed to be permanent.

Coverage of material spend on permanent internal walls and doors				80	%	Enter the % coverage of spend for the items you have entered below. There is no minimum requirement: enter what you know. This should include all structural walls. Exclude head contractor preliminaries and margins.		
Interior wall (permanent)	Steel (light framing)	-	-		t		09_NW	03 or 04
Interior wall (permanent)	Timber framing	-	-		m³		09_NW	03 or 04
Interior wall (permanent)	AAC panel (reinforced)	-	-		m²	Panels of autoclaved aerated concrete (AAC) with reinforcing steel. E.g., Hebel.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Concrete-filled steel panel	-	-		m²	Panels made from a steel sheet outer with an aerated concrete core. E.g., Speedpanel.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Plasterboard	-	-	20,158	m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Plywood	-	-		m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Fibre cement sheet	-	-		m²	Enter as single-layer equivalent. If using 2 layers, multiply the area by 2.	09_NW or 12_WF	03 or 04
Interior wall (permanent)	Insulation	-	-		m²		09_NW or 12_WF	03 or 04
Interior wall (permanent)	Glass	-	-		m²		09_NW or 12_WF	03 or 04
Interior wall (permanent)	Other (Please describe >>)	Blockwork	-	36,161	m²	Please enter a description for any internal wall that does not fit a predefined classification	09_NW or 12_WF	03 or 04
Internal door (permanent)	Aluminium/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Timber/glass	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Timber solid lightweight	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Fire resistant	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Steel	-	-		no.	Please enter as single-leaf equivalent. For double-leaf doors, multiply the quantity by 2.	11_ND	03 or 04
Internal door (permanent)	Other (Please describe >>)		-		no.	Please enter a description for any internal door that does not fit a predefined classification	11_ND	03 or 04
Other (Please describe and add unit >>)		-	-			Please enter a description for any material that does not fit a predefined classification		

Other (Please describe and add unit >>)		-	-			Please enter a description for any material that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any material that does not fit a predefined classification		

Services

				Unit of measure				
Building services included within the main building contract. If the building components that are the subject of the development application or the construction certificate are base building only, then only enter these items. If you cannot split services by type, please enter them all in the "Other services" category at the bottom. Enter all values as material costs in dollars.								
Mechanical services	-	-	-	50,819,235	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	28_SS	05
Vertical transportation	-	-	-	5,668,078	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	28_SS	05
Electrical services	-	-	-	86,120,417	AUD excl. GST	Electrical services including the main power supply, backup generators, security and communications. Excluding solar installations. Where possible, enter material costs excluding labour, plant, equipment, margins and taxes.	26_LP	05
Solar photovoltaic installations	-	-	-		AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	26_LP_LPGP	05
Plumbing/hydraulic services	-	-	-	15,873,381	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	18_PD and 19_WS	05 or 06
Fire services				35,866,486	AUD excl. GST	Where possible, enter material costs excluding labour, plant, equipment, margins and taxes	25_FPSS04 or 39 XWAW_03 or 41_XF	05
Other services (Please describe)	Security, Fuel, CSMS, Comms	-	-	38,142,106	AUD excl. GST	Please group all other services here, meaning that coverage will always be 100% for services. Enter only the material costs (excluding labour, plant, equipment, margins and taxes).	29_SS or multiple	

External works

The materials associated with hard landscaping and outbuildings on the site but outside the building envelope. This includes hardstands, carparks, driveways, covered walkways, decks, patios, awnings, fences, gates, etc. Soft landscaping should be excluded.								
Coverage of spend on external works	-	-	-	80%	%	Required. Coverage of spend for external works (excluding soft landscaping) entered below. Minimum requirement = 80%. Exclude head contractor preliminaries and margins.		
Asphalt	-	-	-		t		33_XR	07
Concrete in-situ	≤10 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>10 MPa to ≤20 MPa	-	-	1,321.8		Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>20 MPa to ≤32 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>32 MPa to ≤40 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>40 MPa to ≤50 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Concrete in-situ	>50 MPa	-	-		m³	Please enter reinforcing steel as part of "Reinforcing steel" below	33_XR or 34_XN or 35_XB or 36_XL	07
Pavers, bricks and blocks	Concrete	-	-		m²		33_XR	07
Pavers, bricks and blocks	Clay	-	-		m²		33_XR	07
Reinforcing steel	Bar & mesh	-	-	112,349	kg	**Include all reinforcing steel bar/mesh in the external works in this row.** Usually this is calculated as kg/m³ per concrete element and then summed. Example: 10 m³ of 40 MPa concrete @ 100 kg/m³ + 5 m³ of 50 MPa concrete @ 150 kg/m³ = 1,750 kg reinforcing steel.	33_XR or 34_XN or 35_XB or 36_XL	07
Reinforcing steel	Fibre & strand	-	-		kg	**Include all steel fibre reinforcing and steel strand in the external works in this row.**	33_XR or 34_XN or 35_XB or 36_XL	07
Structural steel	-	-	-		t		02_11	07
Structural aluminium	-	-	-		t	Includes structures, louvre systems, etc.	35_XB	07
External roof/wall cladding	Polycarbonate	-	-		m²	Enter as profiled polycarbonate sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	PVC	-	-		m²	Enter as profiled PVC sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	Bitumen sheet	-	-		m²	Enter as bituminous sheet that would ordered, including allowance for overlap	35_XB	07
External roof/wall cladding	Steel profile	-	-		m²	Enter as profiled steel sheet that would ordered, including allowance for overlap	35_XB	07
Fill	-	-	-		t	Include purchased material only. Exclude site-won material.	33_XR or 34_XN or 35_XB or 36_XL	07
Sand & gravel	-	-	-		t	Include purchased material only. Exclude site-won material and sand/gravel in concrete.	33_XR or 34_XN or 35_XB or 36_XL	07
Timber (solid)	Sawn softwood	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (solid)	Sawn hardwood	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	CLT	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	Glulam	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	LVL	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Timber (engineered)	OSB	-	-		m³		33_XR or 34_XN or 35_XB or 36_XL	07
Fabric (awning/sunshade)					m²		35_XB or 36_XL	07
Other (Please describe and add unit >>)		-	-			Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any external works that does not fit a predefined classification		
Other (Please describe and add unit >>)		-	-			Please enter a description for any external works that does not fit a predefined classification		

Step 3: Certifier details

Fill out blue cells

The material quantities must be determined through an itemised list of building materials (such as a bill of quantities) and certified by a quantity surveyor, designer, engineer or NABERS Assessor.

Person that completed this form	Value	Note
Name	Dylan Hanney	Required
Company	WT Partnership	Required
ABN	65088341093	
Profession	Quantity Surveyor	Required
Qualification or registration	Bsc Quantity Surveyor and Construction Economic	Required

Person that certified the details in this form	Value	Note
Name	Aodhgan Murphy	Required
Company	WT Partnership	Required
ABN	65088341093	
Profession	Quantity Surveyor	Required
Qualification or registration	MAIQS - 25794	Required

Confirmation of certification	Value	Note
Are 80% of material costs captured for the building's structure, envelope and external works?	Yes	Required
If no - why not?		

Additional comments from data provider
The quantities and costs mentioned in this form are indicative and subject to change and are to be relied on as a guide only. Design information is not available to support detailed quantity take offs. Assumptions have been made in relation to all quantities and costs listed in this form. All quantities and costs listed in this form are subject to change as design information becomes available to support such. All quantities and costs in this form have been provided as a rough guide, or order of magnitude only.

Additional comments of certifier
The quantities and costs mentioned in this form are indicative and subject to change and are to be relied on as a guide only. Design information is not available to support detailed quantity take offs. Assumptions have been made in relation to all quantities and costs listed in this form. All quantities and costs listed in this form are subject to change as design information becomes available to support such. All quantities and costs in this form have been provided as a rough guide, or order of magnitude only.

Attach this Excel spreadsheet to your development application or construction certificate application.

A.2 Energy and Water Benchmarking

Preliminary benchmarking has been conducted to estimate the project's energy and water performance, based on design at Spatial Coordination stage. This has been prepared in response to review comments received from the Department of Planning. The calculations have been made using conservative assumptions, which are listed in this section. As the design develops, assumptions and inputs to the calculations shall be refined.

A.2.1 Operational energy

A.2.1.1 Benchmarking summary

Annual operational energy consumption and related GHG emissions by end use are summarised in Table 2 below using a grid emissions factor of 0.79 t.CO2/MWhe in accordance with NABERS benchmarking. Breakdowns of GHG proportion by end use have been provided:

- inclusive of the Data Hall IT equipment energy consumption (column 4); and
- exclusive of the Data Hall IT equipment energy consumption (columns 5).

The energy consumption summary exclusive of the IT equipment reflects the energy used by the broader facility infrastructure, i.e. cooling, fans, heat rejection small power, lighting etc.

Table 2: Preliminary annual energy estimate

End use	Entire facility summary		GHG proportion of total end uses	
	Energy [MWh]	**GHG emissions [t.CO2]**	**Including IT equip**	**Excluding IT equip**
Office building	1,675	1,324	0.2%	0.8%
IT equipment (DH)	700,800	553,632	77.7%	0.0%
Cooling (DH)	100,777	79,614	11.2%	50.0%
A/C fans (DH)	79,493	62,799	8.8%	39.5%
Vent fans (DH)	2,839	2,243	0.3%	1.4%
Pumps (DH)	11,153	8,811	1.2%	5.5%
Heat rejection (DH)	1,651	1,304	0.2%	0.8%
Lifts (DH)	191	151	0.0%	0.1%
Small power (DH)	318	251	0.0%	0.2%
Lighting (DH)	2,524	1,994	0.3%	1.3%
Facility total (PUE 1.29)	**901,421**	**712,123**	**100%**	**100%**
Facility target (PUE 1.35)	946,080 (4% margin)	747,403 (4% margin)		
Data centre benchmark (PUE 1.59)	1,051,200 (14%margin)	830,448 (14% margin)		

Based on the summary above, the facility achieves a Power Usage Effectiveness (PUE) of 1.29. This outperforms the project brief target of 1.35 and represents a GHG emissions reduction of ~19% when compared with typical data centres of PUE 1.59.

Arup note that modelling has been developed based on previous benchmarking and modelling data as best reflects the design at this point in time. Changes to assumptions such as load diversity (currently none assumed), HVAC systems and operational profiles will affect annual operational energy and end use breakdown.

A.2.1.2 Assumptions

Key assumptions used to develop the energy benchmarking calculations are included below.

- 80 MW IT equipment load
    - No diversity to load assumed, 700,800 MWh consumption per annum
- 5.5-star NABERS whole building rating for office (8,160 m^2 NLA)
    - Results in energy density of 153 kWh/m^2 NLA for base building and fitout, without consideration of renewables
- Lighting and equipment allowable power densities in accordance with NCC 2022 DTS requirements
- Data Centre 24/7 operation; BOH / FOH / office space in accordance with NABERS profiles.
- HVAC equipment selections including unit type and number, COP, efficiency, absorbed power etc. in accordance with Mechanical BOD report.
    - Water-cooled chillers with heat exchangers & cooling towers
- Chiller seasonal COP = 9
    - Single-sided chilled water FWUs for Hyperscale DHs
    - Single-sided chilled water FWUs for Enterprise DHs
    - Chilled water CRAC units for electrical UPS rooms
    - Air-cooled DX split units for UPS Battery Rooms and Interconnect Rooms
    - VRF FCUs for Comms Rooms and Circulation Corridors
    - Natural ventilation for TX rooms
    - Air-cooled DX Pressurisation AHUs with steam humidification for Data Halls

A.2.2 Water

A.2.2.1 Benchmarking summary

Annual water consumption for the whole building is estimated as below in Table 3.

Table 3: Annual Potable Water Consumption Estimate

	kL/year
Consumption	
Toilets	1,736
Urinals	668
Taps	939
Showers	1,162
Fire Testing	12
Heat Rejection	1,803,787
Irrigation	2,084
Reduction through ESD Initiatives:	
Fire testing water reuse	-11
Efficient fixtures and fittings	-1,360
Rainwater collection	-3,023
Total Consumed	1,805,994
WUE Calculated	2.6

A.2.2.2 Toilets, Urinals, Taps, Showers

Annual water consumption of the toilets, urinals, taps and showers has been assumed using the Green Star Potable Water Calculator r4. WELS ratings of the fixtures for the Baseline and Proposed designs have been assumed as below. The usage of these fixtures has been approximated for the combined office, retail and innovation hub floor area, assumed at 10 m^2/person. EOT Showers are assumed to accommodate 7.5% of occupants. The reduction in the water consumption due to higher WELS rated fixtures, as well as recycled water used for toilet flushing, is included within the water reduction contribution of the ESD initiatives presented in Table 3.

Table 4: Assumed WELS Ratings

	WELS Rating	
	Baseline	Proposed Water Reductions
Toilet	3 Stars	6 Stars
Urinals	3 Stars	6 Stars
Taps	4 Stars	6 Stars
EOT Showers	3 Stars	3 Stars

A.2.2.3 Fire Testing

Based on advice from the Fire Engineer, the current design assumes 99% of annual fire testing water will be reclaimed for reuse on-site. The reduction in potable water use through this initiative is captured in the total building water consumption estimate.

Table 5: Assumed Fire Testing Potable Water Consumption

	Baseline	Proposed Water Reductions
Fire Testing Volume	58 kL/year	
% Reclaimed for reuse	80%	99%
Potable water consumption	12 kL/year	1 kL/year

A.2.2.4 Heat Rejection

The following has been assumed to estimate water consumption by the cooling towers:

- Evaporation rate: 1.6 L/kWh heat rejection
- Cycles of concentration: 8
- Bleed rate: 0.32
- Total water use: 1.92 L/kWh heat rejection
- Set point temperature: 24°C (Enterprise), 32°C (Hyperscale)
- Set point relative humidity: 80%
- Set point dew point: 22°C (Enterprise), 32°C (Hyperscale)
- Climate Data: Sydney Olympic Park 2010

Based on the above assumptions, it is estimated that the heat rejection load is 986,446 MWh, thus consumes approx. 1,803,787 kL/year of potable water.

A.2.2.5 Irrigation

Water used for irrigation has been estimated using the Green Star Potable Water Calculator r4, with the following assumptions:

- Total irrigated area: 4,930 m^2
- Crop coefficient: 0.6
- Irrigation system: Sub-surface drop

Based on the above assumptions, it is estimated that irrigation consumes 2,084 kL/year of water.

A.2.2.6 Rainwater Collection

Annual rainwater collection has been estimated using the Green Star Potable Water Calculator r4, with the following assumptions:

- Roof catchment area: 13,401 m2
- Tank size: 150 kL
- Rainfall data: Sydney 1996-2005

Based on the above assumptions, it is estimated that approx. 3,023 kL/year of rainwater is collected for reuse in toilet flushing and irrigation.